

Opponent's opinion of habilitation thesis „Implementaion of Inquiry-Based Learning (IBL) into Chemistry Teaching at Various Levels of Education” written by Pawel Bernard, Ph.D.

Habilitation thesis represents the set of 12 original scientific articles focused on implementation of the inquiry-based learning in teaching chemistry at various levels of education. All the presented publications are not older than 10 years and are published in renowned scientific journals. The article No. P6 “Online Experimental during COVID-19 Secondary School Closure: Teaching Methods and Student Perceptions” react on very actual problems associated with on-line teaching during pandemic.

The set of 12 articles are supplemented by accompanying text on 64 pages incl. 19 figures and two tables and is supported by more than 200 references. The text is comprehensible, concise and linguistically very well written.

I have a few remarks which are sorted according to page-numbering of the text:

1) p. 29 (chapter 8, accompanying text to the article No. P6):

The positively evaluated fact, that during online lessons the teachers can do many parts quicker – run measurements, show videos recorded earlier etc. is not relevant in chemical experiment. The time play very important role in chemistry and the students must obtain the information about real time course of each experiment.

2) p.36 (chapter 11, accompanying text to the article No. P9):

The surface properties of material play a key role in heterogeneous catalysis. However, specific surface area values are not given in the accompanying text, which somewhat reduces its clarity. In the original work these values are of course given.

3) p. 38 (chapter 12, accompanying text to the article No. P10)

When you mention “cobalt spinel” it would be nice to explain students, that “spinel” is important structural type of general formula “ $A^{II}B^{III}_2O_4$ ” and why Co_3O_4 has also spinel structure ($Co^{II}Co^{III}_2O_4$).

The above mentioned remarks do not reduce the high quality of submitted work at all. I fully recommend the submitted work for further proceedings.

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